

# Contemporary Concepts IN SMILE DESIGN

## Global Esthetics

The all-new 2nd edition of the AACD Guide to Accreditation Criteria, *Contemporary Concepts in Smile Design: Diagnosis and Treatment Evaluation in Comprehensive Cosmetic Dentistry*, presents universally accepted smile design parameters established over several decades. A “must have” in your professional library, the following is an excerpt from Chapter One, Global Esthetics.



**Figure 1:** Smile line in harmony with the incisal plane.

An assessment of dental esthetics begins, quite simply, with the smile. If the images we are so intently evaluating are of beautiful and healthy teeth, then the frame that encircles these players on the stage are the soft tissues of the supporting structures, the lips, and their orientation in the face. Global esthetics focuses on these criteria that are observed in unretracted smiles: how the smile orients to the face. Understanding the parameters of this global matrix is a critical starting point for a smile that harmonizes with the patient, both physically and psychologically. These positions and contours of teeth do not occur “by accident”; rather, they are affected by the unique functional parameters of each patient. Violation of these criteria results in an unbalanced appearance that will affect the patient’s esthetics and functional comfort. Criteria that constitute the global esthetic parameters are the smile line, the midline, the incisal edge position, the incisal plane, and the buccal corridor.

### Smile Line

The **smile line** (Fig 1) refers to an imaginary line that is traced along the incisal edges of the maxillary anterior teeth and should mimic the curvature of the superior border of the lower lip while smiling. Consideration should be given to any significant lip asymmetry or extreme curvature of the lower lip.<sup>1</sup> A second criterion for the **smile line** illustrates that the centrals are preferably slightly longer (or at the very least not any shorter) than the cuspids along the incisal plane. The importance of this criterion

can be observed when the centrals appear shorter than the cuspids along the incisal plane. This is referred to as a **reverse smile line**.<sup>2</sup>

The **lip line**, not to be confused with the smile line, refers to the position of the inferior border of the upper lip and thereby determines the display of either tooth or gingiva at this hard and soft tissue interface. The **gingival zenith** is defined by the most apical extent of the scallop of gingival-free margin of any particular tooth. Under ideal conditions the gingival zenith and the lip line should be congruent. The lip line while smiling is generally considered acceptable if it is within a range of 2 mm apical or coronal to the height of the gingival zenith of the maxillary centrals. The display of 3 to 4 mm (or more) of gingivae may introduce the consideration for alteration of the architecture to achieve an ideal result. An evaluation of the relative proportions of the teeth will help to suggest which alterations will be most appropriate. A lip line is considered low if there is absolutely no gingival tissue visible during smile formation. Conversely, a lip line is considered **high** if excessive gingival tissue is readily displayed while smiling. A high lip line presents an unforgiving reveal of all the aspects of the periodontal architecture and raises the esthetic risk assessment when considering treatment.<sup>3</sup>

The **smile line** together with esthetics, phonetics, and function helps determine the incisal edge position and influences length of the maxillary centrals. The following considerations may also serve as a guide to the clinician when assessing and designing the size, position, and shape of the maxillary central incisors.

1. Convention accepts as “pleasing,” a range of 10 to 12 mm for the length of the maxillary centrals.<sup>4</sup>
2. The centrals are most likely too long if they cause lower lip impingement, dimpling, or entrapment during the formation of the “F” sound. This phonet-

ic test should be enunciated softly, not forcefully, as the muscles of the face can mistakenly accommodate in deliberate movement. In most cases, this exercise will not show if the teeth are too short. Ideal tooth display should be maximized with evaluation of lips at rest and the “E” smile, and modulated by functional and phonetic parameters.<sup>5,6</sup>

- With the lips at rest, a youthful appearance of an unworn dentition will display 2 to 4 mm of the incisal aspect of the central incisors (Fig 2).<sup>7</sup>
  - When the patient says “E” while deliberately smiling, the incisal edges of the maxillary centrals should comfortably be positioned 50% to 70% down from the spaced defined by the upper and lower lip (Fig 3).<sup>6</sup>
3. Evaluation of the incisal plane to the occlusal plane in the lateral view can be useful. The centrals are most likely too short if their incisal surface is above the occlusal plane, and they may be too long if their incisal surface is below the occlusal plane.
  4. There are commonly accepted standards of the width-to-length proportions of central incisors that are deemed to be esthetic. Ideally, the width of the central is 75-80% of its length.
  5. Central length is made to approximate 1/16 of facial length. A commercially available “tooth indicator” facilitates such a conversion. Although not a universally accepted design criterion, some practitioners consider it a good starting point.<sup>8</sup>

In the end, it is the judgment of the restoring dentist to create harmony and balance through evaluation and alteration of provisionals rather than rigid adherence to a mathematical formula. If the prescribed parameters cannot meet the desired esthetic result, the clinician should consider other potential orthodontic or orthognathic treatment options.

## INCISAL EDGE POSITION

The incisal edge position (IEP) of the central incisors is the cornerstone from which all smile design is initiated. This position needs to take into consideration both functional and esthetic parameters that will be unique to every patient. The smile from an anterior superior angle and in profile will aid in the illustration of this relationship (Fig 4).<sup>9,10</sup>

Only after the incisal edge position of the centrals has been determined can the length, contours, and proportions of the proposed restored teeth be designed. From the occlusal view, the incisal edge should be definitive and clear and not a rolled landmark.



**Figure 2:** The “rest position” should reveal 2-4 mm of tooth structure in a youthful smile.



**Figure 3:** The “E” smile gives the clinician an indication of the relative lip mobility and the vertical position of the maxillary incisal edge relative to the lip drape.



**Figure 4:** The “tipped down smile” is taken at a 45° angle to the occlusal plane. The maxillary edge of the central incisors should fall within the wet-dry line of the lower lip to facilitate the lip closure path.

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